

IDAHO

DEPARTMENT OF FISH & GAME

Joseph C. Greenley, Director

FEDERAL AID TO FISH & WILDLIFE RESTORATION

Job Performance Report

Project F-71-R-3



REGIONAL FISHERY MANAGEMENT INVESTIGATIONS

Job IV-a. Region 4 Mountain Lake Investigations
Job IV-b. Region 4 Lowland Lake Investigations
Job IV-c. Region 4 Stream Investigations
Job IV-d. Region 4 Technical Guidance

by

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April, 1979

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JOB PERFORMANCE REPORT

State of Idaho Name: REGIONAL FISHERY MANAGEMENT
INVESTIGATIONS
Project No. F-71-R-3 Title: Region 4 Mountain Lake
Job No. IV-a Investigations
Period Covered: 1 January 1978 to 31 December 1978

ABSTRACT

Data obtained from 219 anglers who fished lakes in the Rainbow Basin area near Trinity Mountain showed the anglers fished 485.5 hours and caught 509 trout for an average catch rate of 1.05 trout per hour. Electronic counters placed on trails by the Forest Service indicate actual use of the area may be considerably higher than data from the voluntary questionnaire form indicates.

One of the best populations of large trout was noted in Heart Lake where fish observed averaged approximately 330 mm (13 in) in length. Trout in all the lakes except Green Island and Little Rainbow were noted to be in excellent condition.

Natural reproduction of trout was noted in Hideaway Lake for the first time. Green Island and Little Rainbow Lakes have heavy natural reproduction and are both overpopulated.

The average age of 62 female anglers using the Rainbow Basin area was 25 years with the range from 2 to 59 years. One hundred fifty-three male anglers using the area averaged 24.4 years and ranged from 4 to 60 years.

Being outdoors was listed as the primary reason for utilizing the Rainbow Basin area by 30.5% of the persons completing a volunteer survey form. Hiking was second with 28.3% and fishing third with 24.9%.

Anglers from 15 states and one foreign country utilized the area.

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RECOMMENDATIONS

Increase fish stocking levels slightly for Heart and Big Lookout Lakes and maintain all the lakes on 3-year aerial stocking schedule.

Cooperate with the U.S. Forest Service if further study of the Rainbow Basin Lakes is determined necessary.

Conduct similar studies on certain other high mountain lake groups in Region 4.

OBJECTIVES

To obtain use and angler harvest data on selected high mountain lakes within the region.

To collect fish population data from various high mountain lakes in the region.

To collect morphological information and water samples from various high mountain lakes in the region.

To evaluate past stocking success and any naturally occurring spawning.

INTRODUCTION

Boise National Forest personnel conducted a study of eight high mountain lakes in the Trinity Mountain area from July through September in 1978. Idaho Department of Fish and Game personnel cooperated and assisted in certain phases of the study including a portion of the creel checks. The area surveyed lies within the Rainbow Basin area and foot travel only is allowed under the present Forest Service land use plan--cycles and horses are prohibited.

TECHNIQUES USED

A voluntary interview box containing Angler Survey Forms (Fig. 1) was installed by U.S. Forest Service personnel on each of the three major access routes into the Rainbow Basin Lakes as indicated in Figure 2. For study purposes these boxes were designated Big Trinity, Lookout North and Lookout South. Battery-powered electronic counters were placed on major access trails to get an indication of actual total number of persons going into the area.

Forest Service employees, YACC employees working for the Department of Fish and Game and Department of Fish and Game employees went into the various lakes to gather information on fish species and length. Forest Service personnel also collected other types of information for the lakes.

FINDINGS

Data was obtained from 219 anglers who fished the lakes in the Rainbow Basin area between 1 July and 30 September 1978 (Table 1). These anglers fished
(Cont. on page 6)

ANGLER SURVEY FORM
IDAHO DEPARTMENT OF FISH AND GAME

Date _____

Please list the total number of persons in your group _____

Ages of persons in group: Females _____ Males _____

City & State from (if more than one, please list): _____

Please record the total number of days spent in the area surrounded by the heavy dashed line on the attached map _____

Please record the total number of trout caught from each lake. (refer to the attached map for lake names & locations.) These totals should include all fish caught by anglers in your group even if some were released back into the lake.

	<u>No. Trout Caught</u>		<u>No. Trout Caught</u>
Green Island Lake	_____	Little Rainbow Lake	_____
Fiddle Lake	_____	Middle Rainbow Lake	_____
Big Lookout Lake	_____	Big Rainbow Lake	_____
Heart Lake	_____	Hideaway Lake	_____

Please list the approximate number of hours fished at each lake for each angler in your group.

	Green Island Lake	Fiddle Lake	Big Lookout Lake	Heart Lake
Angler 1	_____	_____	_____	_____
Angler 2	_____	_____	_____	_____
Angler 3	_____	_____	_____	_____
Angler 4	_____	_____	_____	_____
Angler 5	_____	_____	_____	_____
Angler 6	_____	_____	_____	_____
Angler 7	_____	_____	_____	_____
Angler 8	_____	_____	_____	_____

	Little Rain- bow Lake	Middle Rain- bow Lake	Big Rainbow Lake	Hideaway Lake
Angler 1	_____	_____	_____	_____
Angler 2	_____	_____	_____	_____
Angler 3	_____	_____	_____	_____
Angler 4	_____	_____	_____	_____
Angler 5	_____	_____	_____	_____
Angler 6	_____	_____	_____	_____
Angler 7	_____	_____	_____	_____
Angler 8	_____	_____	_____	_____

Have you been interviewed previously on this trip? _____

Please circle your primary reason for being in this area:

Fishing Hiking Photography *Being Outdoors*

Others (please list)

General comments, if any: _____

Figure 1. Angler Survey Form used in Rainbow Basin Lakes study July 1 to September 30, 1978.

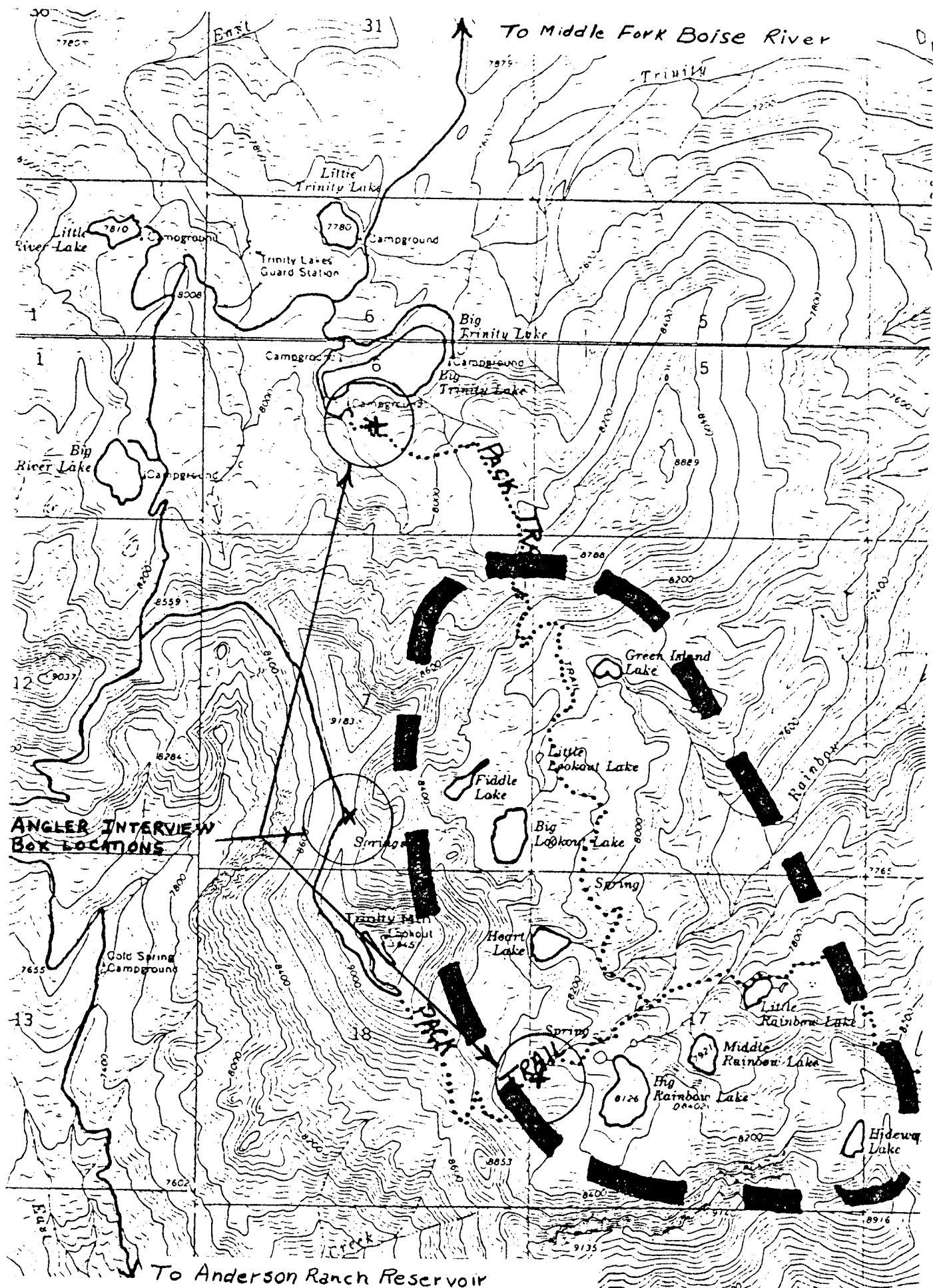


Figure 2. Approximate location of voluntary interview boxes on major access routes into Rainbow Lakes Basin. 4

Table 1. Summary of data obtained from 219 anglers in the Rainbow Basin
Lakes near Trinity Mountain between 1 July and 30 September 1978.

Lake	No. anglers	Total angler hrs.	No. trout caught	No. fish/hour
Hideaway	4	4	10	2.50
Little Rainbow	43	91	199	2.19
Fiddle	6	4.5	7	1.56
Green Island	54	140	207	1.48
Big Rainbow	48	114	55	0.48
Middle Rainbow	26	61	23	0.38
Heart	14	30	7	0.23
Big Lookout	24	41	1	0.02
Totals	219	485.5	509	1.05

a total of 485.5 hours and caught 509 trout for an average catch rate of 1.05 trout per hour for all eight lakes combined. Big Lookout Lake anglers had the lowest catch rate of only 0.2 trout per hour and Hideaway Lake had the high catch rate (2.19) per hour followed by Fiddle Lake (1.56), Green Island (1.48), Big Rainbow (0.48), Middle Rainbow (0.38) and Heart (0.23).

Electronic counters placed on the main trails indicate considerably more persons utilized the area than are indicated by the angler survey forms from the voluntary angler interview boxes. Forest Service personnel are currently evaluating results from these counters.

Most of the species and length information is not available at this writing but will be incorporated in the report being put out by the U.S. Forest Service. YACC employees working for the Department of Fish and Game measured nine trout at Big Rainbow Lake on 14 September which ranged from 203 to 356 mm (8-14 in) with an average length of 300 mm (11.8 in). Department of Fish and Game employees checking the lakes on 28 and 29 September found the best population of large trout in Heart Lake where the average length of the rainbow measured was approximately 330 mm (13 in). Three trout they measured from Middle Rainbow Lake averaged about 330 mm (13 in), 2 from Green Island averaged 203 mm (8 in) and 7 from Little Rainbow averaged 178 mm (7 in). All of these trout with the exception of those caught in Green Island and Little Rainbow were in excellent body condition.

Natural reproduction of cutthroat was noted by Department personnel at Hideaway Lake. Cutthroat of approximately 25 mm (1 in) were seen in the outlet of the lake. This is the first observation which has been made of reproduction in this lake. Natural reproduction of rainbow was also noted at Green Island and Little Rainbow Lakes both of which are overpopulated.

Ages of anglers utilizing the Rainbow Basin Lakes are summarized in Table 2. The average age of 62 female anglers was 25.0 years with the range from 2 to 59 years. Average age of 153 male anglers was 24.4 years with the range from 4 to 60 years.

Eighty-six groups totaling 250 persons were reported for an average group size of 2.9 persons. The average time spent by groups in the Rainbow Lakes Basin was 1.6 days.

Being outdoors was the primary reason listed by 30.5% of 177 persons utilizing the Rainbow Basin (Table 3). Hiking was second with 28.3%, fishing third with 24.9%, photography fourth with 12.4% and other miscellaneous reasons last with 3.9%.

Anglers from 15 states and one foreign country (Japan) utilized the area. Fourteen Idaho cities were represented by Idaho anglers using the area.

ACKNOWLEDGMENT

Excellent help on the Department of Fish and Game portion of the project was provided by YACC personnel working for the Department of Fish and Game as well as regular Department employees. I would like to express my appreciation to Connie Fassio, Anne Firman, Gail Elison, Cheryl Walter and Debbie Fritz, YACC employees who assisted on the project and Carl Nellis and Gary Gadwa, regular Department employees.,

Table 2. Ages of 62 female and 153 male anglers utilizing Rainbow Basin Lakes between 1 July and 30 September 1978.

	Number females	Percent of females	Number males	Percent of males	% of Total (215) females & males
9 & Under	6	9.7	13	8.5	8.9
10-19	15	24.2	50	32.7	30.3
20-29	20	32.2	46	30.1	30.7
30-39	14	22.6	25	16.3	18.1
40-49	5	8.1	11	7.2	7.4
50-59	2	3.2	7	4.6	4.1
60-69	0	0	1	.6	.5
Totals	62	100.0	153	100.0	100.0

Average age of female anglers 25.0 years. Range: 2-59 years.

Average age of male anglers 24.4 years. Range: 4-60 years.

Table 3. Primary reasons for being in area as listed by 177 persons utilizing the Rainbow Basin Lakes near Trinity Mountain between 1 July and 30 September 1978.

	Fishing	Hiking	Photography	Being outdoors	Other
No. Persons	44	50	22	54	7
Percent	24.9	28.3	12.4	30.5	3.9

JOB PERFORMANCE REPORT

State of Idaho Name: REGIONAL FISHERY MANAGEMENT
INVESTIGATIONS
Project No. F-71-R-3 Title: Region 4 Lowland Lakes
Job No. IV-b Investigations
Period Covered: 1 January 1978 to 31 December 1978

ABSTRACT

An apparent high pH problem on Lake Fork Lake on a tributary stream to Sublett Reservoir caused a heavy but not total mortality of brown trout. The main reservoir was not affected with this problem.

A serious eye fluke problem on trout in Sublett Reservoir occurred during the summer of 1978. The problem was first noted in August and approximately 50% of the trout checked in creels had prominently bulging eyes. Analysis of some of the affected trout by the Department pathologist showed the flukes were restricted to the vitreous humor of the eye and none were noted in the lens. Some fairly heavy mortality was noted in September and October from the fluke but the actual extent of the problem has not yet been determined.

Spawning success of bass and bluegill was noted to be very good in Carey Lake during 1978. The lake will be opened to angling again in 1980.

Reservoirs in Region 4 affected by the 1977 drought such as Magic, Roseworth and Little Camas produced good angling in the 1978 season. Magic Reservoir started off slowly but produced excellent angling as the summer progressed. Little Camas Reservoir, which was chemically eradicated in 1977, was heavily restocked and produced fine angling.

An emergency eradication project was undertaken in late May and early June after it was discovered that a number of adult carp had been illegally stocked in a pond on Elkhorn Creek in late June 1977 by employees of Elkhorn Village. The pond was eradicated with rotenone effecting a total kill of adult carp. No indicated of reproduction was observed. Elkhorn Village officials reimbursed the Department for \$1,193.00 -- the total expenses incurred in the eradication project.

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RECOMMENDATIONS

Continue investigations of the eye fluke problem in Sublett Reservoir during 1979 to determine the exact extent of the problem.

Continue monitoring bass and bluegill populations in 1979 and assess spawning success.

OBJECTIVES

To check on the status of rainbow, brown and cutthroat trout populations in Sublett Reservoir.

To check survival of recent largemouth bass plantings in Lake Walcott and largemouth bass and bluegill-sunfish plantings in Carey Lake.

To check on fish populations and recovery of the fishery in reservoirs seriously affected by drought conditions.

INTRODUCTION

Elkhorn Pond -- Emergency Carp Problem and Pond Treatment

Department of Fish and Game personnel received a call in late May of 1978 from the resident manager of Elkhorn Village concerning carp he had planted in 1977 in the uppermost pond just off Elkhorn Creek in the center of Elkhorn Village. The manager wanted information on how he could further screen the pond to prevent carp fry and fingerlings from emigrating out. Since no carp had been present in the Big Wood River drainage above Magic Dam prior to this time, we were highly alarmed over the matter. If carp ever became established in Magic Reservoir, it could have a disastrous effect on the reservoir's excellent trout fishery. The situation was determined to be an emergency and was given immediate priority.

Local conservation officers filed a complaint and summons against the man after he freely admitted he had stocked carp, goldfish and channel catfish in the pond. He apparently was unaware he was violating the law and stated he had about 30 adult carp and a small number of goldfish and channel catfish stocked in the pond along with some rainbow trout on 23 June 1977. The fish were obtained from the Blue Lakes Trout Farm located near Twin Falls on the Snake River and were ordered at the suggestion of one of the manager's groundskeepers to help thin out algae and aquatic vegetation in the pond.

The pond the carp were illegally stocked in is the uppermost of six ponds on Elkhorn Creek, five of which are on the Elkhorn Company property. Another pond is present on the property but does not drain into Elkhorn Creek. When the upper-most pond was constructed, they intended to plant only trout in it and had a permit which listed only rainbow trout. Local conservation officers had checked the pond outlet prior to the time any fish were placed into it and found it was screened with chickenwire fencing material which would prevent adult fish from moving out.

TECHNIQUES USED

Sublett Reservoir - Trout Populations

Creel checks were made on Sublett Reservoir and on a pond on Lake Fork Creek a short distance about the reservoir.

Dissolved oxygen and pH and temperature readings were taken on Lake Fork Lake.

Trout were collected from Lake Fork Lake and Sublett Reservoir for disease analysis.

Lake Walcott Largemouth Bass Plantings and Carey Lake Bass-Bluegill Plantings

Visual observations were made on Carey Lake to monitor bass and bluegill spawning.

Reservoirs Affected by 1977 Drought

Creel checks were made on reservoirs during 1978 on reservoirs which had been drawn to critical levels by the 1977 drought.

Elkhorn Pond - Emergency Carp Problem and Pond Treatment

Rough estimates were made of surface acreages of the six ponds by shore-line measurements and the uppermost pond was sounded from a boat so an estimate of acre feet could be made:

Water temperatures were regularly taken on the upper pond.

A 500-watt, D.C. Shocker was used to sample the stream below the two upper-most ponds and the uppermost pond proper for fish populations.

On 26 May we set one 38.1-m (125-ft) experimental monofilament gill net in the uppermost pond and let it fish for approximately 3 hours. Portions of the pond's shoreline were electrofished and we detinated a 6.1 m (20 ft) section of prima cord near the dam.

We decided to eradicate the upper pond with rotenone after having it pumped down to a low level. To prevent any fish from being passed on downstream, I constructed a large straining box for the pump outlet hose and covered it with 3.2-mm (1/8-in) mesh hardware cloth. All water pumped from the pond was strained through this box. Pumping was started on 31 May and the pump was operated during daylight hours until the morning of 2 June when the pond had been lowered to an average depth of .46 m (1.5 ft).

The pond was eradicated on 2 June using 7.6 l (2 gal) of emulsified rotenone. The rotenone was diluted with water in a large garbage can and sprayed from the bow of a boat with a fire hose. Concentration of the rotenone was estimated to be approximately 12 mg/l.

FINDINGS

Sublett Reservoir -- Trout Populations

Anglers on Lake Fork Lake, approximately 6.5 km (3.5 mi) above Sublett Reservoir, in mid June reported large numbers of brown trout in distress. Up until this time, angling on the lake had been good with the catch rate of about a trout per hour. The local conservation officer and I checked out the pond on 13 June and observed an estimated 100 to 150 dead brown trout and a fair number of moribund fish. The fish ranged in length from approximately 229 to 365 mm (9 to 14 in) and were from fingerling plants made in the pond in 1976. We obtained a pH reading of 10 and assumed this was the probable cause of the kill as the dissolved oxygen was 12 mg/l and the water temperature was approximately 14.4 C (58 F). The kill was not total, however, and large numbers of apparently healthy brown trout were observed. Three of the dead brown trout were sent to the Department pathologist for analysis and no disease problems could be detected, substantiating it was probably a pH problem. Checks on Sublett Reservoir made on the same day showed no distressed trout.

Angler success for rainbow, cutthroat and brown trout on Sublett Reservoir was about normal, averaging roughly 0.5 trout per hour from opening day (29 May), through early August. However, in mid August creel checks indicated approximately half the trout caught had prominently bulging eyes. Trout with the eye problem were still being caught readily at this time and no known mortality had occurred yet.

Trout with the bulging eye symptom were sent to the Department pathologist for analysis. Flukes were detected in the eyes of all fish examined, varying in number from two to eight. However, no flukes were present in the lens of the eye where they are normally found -- all were found in the vitreous humor.

Additional distressed trout were collected by the Department pathologist in October and flukes were also found in the eyes of all of these trout. As previously, all flukes were found only in the vitreous humor with none present in the lens.

Some fairly heavy mortality of trout was noted in the reservoir in September and October from the eye fluke problem, but the actual extent of the problem has not yet been determined. Plans are being made to further monitor the extent of infestation in Sublett Reservoir and other nearby reservoirs in 1980.

Lake Walcott Largemouth Bass Plantings and Carey Lake Bass-Bluegill Plantings

We planned to check on the largemouth bass plantings in Lake Walcott, utilizing a research boat rigged for electrofishing. Various conflicts, however, pre-vented this work from being done.

Portions of Carey Lake were dredged out when it went dry during the 1977 drought. It was restocked with largemouth bass and bluegill obtained from other waters in Region 4. Observations made on the lake by Department personnel during 1978 -indicated very good spawning success of adult bass and bluegill. The decision was made, however, not to open the reservoir to angling until 1980 to allow adult fish to spawn again, and to allow their progeny to grow to catchable size.

Drought Affected Reservoirs

Magic Reservoir

Magic Reservoir received heavy supplemental plantings of catchable rainbow prior to opening of the general fishing season but angling pressure was down and success slow on opening day (27 May) of the 1978 general angling season. The reservoir had been drawn down to only 3,300 acre feet or 1.7% of its capacity (191,500 af) during the summer of 1977. A total of 254 boat and bank anglers checked on opening day caught 134 rainbow in 769 hours of angling for a catch rate of only 0.2 trout per hour. The average size of the fish was excellent, however, with the fish running approximately 381 mm (15 in) in length and about .68 kg (1.5 lb) in weight. Boat angling success was better than bank angling but still very slow. A total of 187 boat anglers were checked with 111 rainbow in 492 hours of angling for a catch rate of 0.23 fish/hr. A total of 67 bank anglers checked, caught 23 rainbow in 277 hours of angling for a catch rate of 0.2 trout/ hr. Most of the opening day catch consisted of 1977 fingerling plantings and very few of the recently planted catchables showed up in the creel.

Angler success on Magic improved greatly during the latter half of June and the entire month of July when the catch rate averaged better than one trout per hour. Trollers and float tubers had the best success with the trout averaging 432 mm (17 in) in length with many up to 559 mm (22 in). Fingerling plantings from 1977 still dominated the catch in June and July but catchables began to make up about 50% of the catch during August and September.

Roseworth Reservoir

Roseworth Reservoir produced fair angling on opening weekend. There were 150 anglers checked on opening day with a catch rate of 0.5 rainbow trout per hour. Most of the trout were in the 254 to 305 mm (10 to 12 in) range but about 5% of the catch consisted of 432 to 457 mm (17 to 18 in) rainbow. As the summer progressed, the catch rate rose to an average of close to a trout per hour.

Little Camas Reservoir

Little Camas Reservoir was heavily restocked with approximately 238,000 fingerling and 47,000 catchable rainbow trout between 24 April and 17 July 1978. It had been chemically eradicated with Fintrol on 26 October 1977 after having been drawn to less than 19 acre feet during the drought.

Fishing on the reservoir was good early in the summer and excellent during September and October when catch rates exceeded 1.5 trout per hour. Trout checked in the creel were in fine condition with some of the catchables over 406 mm (16 in) by fall.

Elkhorn Pond -- Emergency Carp Problem and Pond Treatment

The uppermost pond containing the carp, goldfish and channel catfish was found to have a surface area of 0.24 ha (0.6 acre) and an average depth of 1.2 m (4 ft) and contained approximately 0.003 hm³ (2.4 af). Ponds number two and three going downstream were roughly the same size as the uppermost pond (#1) 0.24 ha (0.6 acres). Ponds number 4 and 5 were both approximately 0.10 ha (.25 acres) in surface area and the sixth pond (off the Elkhorn development) was about 1.2 ha (3 acres) in area with an average depth of approximately 2.4 m (8 ft)

containing roughly 0.03 hm³ (24 acre ft). The water temperature of the upper pond was 20.6 C (69 F).

Very little water (approximately 0.1 cfs) was flowing from the two upper ponds. We electrofished portions of the stream below both of these ponds but obtained no fish of any species. The stream below pond No. 5, however, contained excellent trout populations and was flowing an estimated 5 cfs. We electrofished about 6.1 m (20 ft) of the stream below the pond and turned over an estimated 130 rainbow and brook trout ranging in size from approximately 127 to 330 mm (5 to 13 in).

No fish were obtained from the prima cord detonation in the pond on 26 May. We obtained one carp approximately 457 mm (18 in) in length in our electrofishing of shallow areas near the pond's shoreline. The fish was a female about 2 weeks away from spawning. Several carp were temporarily captured in our monofilament gill net set but managed to escape before the net was pulled and the net contained no fish when checked.

No fish showed up in the outlet straining box while the pond was being pumped to a lower level.

Some carp were noted in distress within an hour after introduction of the emulsified rotenone and many of the fish started dying in about an hour and a half. A total of 23 adult carp, five large goldfish and one 356 mm (14 in) channel catfish were obtained during the first day of the treatment project. One 2.7 kg (6 lb) and one 2.3 kg (5 lb) carp were obtained and no fish under 254 mm (10 in) were noted. The 2.7 kg carp was a bright orange coi variety fish. Another dead goldfish had been noted near the pond outlet prior to the treatment.

Seventeen more dead carp showed up in the pond between 3 June and 6 June bringing the total fish killed to 40 carp, five goldfish and one channel cat. The dead goldfish found just prior to the treatment and another dead carp observed by Elkhorn employees after the ice left the pond in the spring brought the total known fish in the pond to 41 carp, 6 goldfish and 1 channel catfish. The largest carp obtained was 737 mm (29 in) in length and weighed approximately 9.1 kg (20 lbs) with the rest of the carp ranging between 254 and 508 mm (10-20 in). No live trout were present in the pond when it was treated and trout remains found in the pond indicated a total winterkill on this species had occurred.

All indications are the carp had all spawned prior to the time they were placed in the pond on 23 June 1977, since no young of the year were obtained. Also, none of the carp had spawned yet this year and all appeared to be at least 2 weeks away from spawning.

To determine if the pond had detoxified, five hatchery catchable rainbow were placed in a live box near the pond outlet headgate on 14 June. The pond had not yet refilled and only had about 45.7 cm (18 in) of water in it. All five trout were dead the following morning but the kill may have been caused by high water temperatures.

On 21 June, a few days after the pond had been refilled, I put nine hatchery catchable rainbow in the pond and they were all alive the following morning, indicating the pond had definitely detoxified.

After the resident manager of Elkhorn Village (Bill Eittreim) entered a plea of guilty to the complaint alleging he placed the illegal fish in the Elkhorn Pond, the Magistrate Judge (Daniel L. Alban) conferred with the Prosecuting Attorney and the local conservation officer. It was agreed if Mr. Eittreim would reimburse the Department of Fish and Game for all costs associated with eradication of the pond, the complaint against him would be dismissed. The total expenses for the eradication project amounted to just over \$1,193.00 and the bill was submitted to the resident manager through the Magistrate Judge. The Department received full payment for the project from the Elkhorn Company in early March of 1979.

JOB PERFORMANCE REPORT

State of Idaho Name: REGIONAL FISHERY MANAGEMENT
INVESTIGATIONS
Project No. F-71-R-3 Title: Region 4 Stream Investigations
Job No. IV-d
Period Covered: 1 January 1978 to 31 December 1978

ABSTRACT

Five white sturgeon were caught, tagged and released in the Snake River between Bliss Dam and Bancroft Springs in 1978. The fish ranged in length from 66 to 213 cm (26 to 84 in). Construction of Wiley Dam appears fairly imminent but Dike Dam construction is still uncertain.

A planting of 27,000 brown trout fingerlings made in the Little Wood River in April of 1978 appears to have had good survival. This is the first planting made in the stream since 1974.

Preliminary flow studies conducted below Minidoka Dam indicate a flow of 1,300 cfs below the spillway section would provide adequate amounts of trout habitat during cooler parts of the year and 1,900 cfs would be needed during the hottest part of the summer.

Cutthroat trout populations in relatively inaccessible sections of Big Cottonwood Creek, Cassia County, were found to be nearly six times greater than stream sections paralleled by a road. As a result, the U.S. Forest Service has tentatively agreed not to construct a planned improved cycle

Author:

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RECOMMENDATIONS

Continue monitoring of brown trout reproduction on the Little Wood River and continue annual supplemental plantings of hatchery fingerling browns through 1980.

Cooperate closely with University of Idaho biologists in formulating satisfactory minimum flows below the spillway area of Minidoka Dam.

Make every effort to preserve good cutthroat trout streams in Region 4 and oppose any additional trail or road construction along these streams. Further assess significant cutthroat trout populations in streams of the region.

OBJECTIVES

To get information on sturgeon populations in the region.

To determine the success of brown trout reproduction in the river.

To determine the numbers of distribution of trout in the Snake River below Minidoka Dam.

INTRODUCTION

Minidoka Dam - Trout Distribution Studies in Snake River Below

The Bureau of Reclamation is studying the feasibility of rehabilitating or replacing the generating units in the Minidoka Dam power plant. These generating units were installed between 1909 and 1942 and require considerable maintenance. Also, the Bureau estimates the existing installed generating capacity of 13,400 kilowatts could be increased to about 30,000 kilowatts.

One impact of the proposed project would be a reduction of spills below the dam spillway area. An enlarged power plant could possibly use all the excess flows except during the months of May and June. As a result, there would be no flows below the spillway except for leakage. At the present time, flows in excess of the powerplant capacity and the irrigation diversion canals spill through radial gates and over the flashboards of the spillway from March to about mid-September in an average year.

An excellent high quality fishery currently exists in the area below the spillway for rainbow, cutthroat and brown trout and whitefish. Rainbow in the 1.8 to 3.6 kg (4 to 8 lb) range are relatively common and trout over 7.7 kg (17 lb) are known to have been caught.

The Cooperative Fisheries Research Unit at the University of Idaho contracted with the Bureau of Reclamation for an intensive 3-year study of the area. Phil Hiebert is the study project leader. Idaho Department of Fish and Game personnel have assisted in different preliminary phases of the work and will continue with some assistance as needed. However, the project will be directed by the Cooperative Fishery Research Unit and their personnel will be doing the major share of the work.

Big Cottonwood Creek -- Emergency Cutthroat Trout Survey

The U.S. Forest Service informed the Department in late May, 1978, they were planning to improve an existing but very poor trail on Big Cottonwood Creek in Cassia County to allow through traffic by trail cycles. We were highly concerned since this stream has one of the best native cutthroat trout populations in this region and we felt their plans for the cycle trail would seriously jeopardize these populations. Specific information on the area involved was lacking so we conducted a quick survey to gather information which could help us fight the trail proposal.

TECHNIQUES USED

Sturgeon Study

All sturgeon in the study were caught by hook and line and slid onto a soft, wet mat at the river's edge after landing. For age analysis at a later date, a section of the leading pectoral fin ray was excised from each fish caught. Metal jaw tags were affixed to a pectoral fin ray, total lengths were taken and the fish immediately released.

Brown Trout Studies -- Little Wood River

Time conflicts prevented any electrofishing work on the Little Wood River to check on brown trout reproduction. Brown trout fry raised at the Hagerman Hatchery were stocked in portions of the stream in April of 1978.

Minidoka Dam Studies

Observations were made and aerial photos taken from a helicopter by Bureau of Reclamation personnel on 28 March 1978, at different flow stages past the dam.

Additional flow studies were conducted at Minidoka Dam on 4-5 October 1978. The spillway below the dam was divided into four separate flow areas. Oranges were floated through various test sections to measure the travel time at different flows.

Approximately 9,900 catchable rainbow trout were jaw tagged at the Hagerman Hatchery on 31 October and 1-2 November 1978. Half of these fish were planted below Minidoka Dam and half in Lake Walcott in the Gifford Springs area.

Big Cottonwood Creek -- Emergency Cutthroat Trout Survey

A 500 watt, 230 volt D.C. shocker was used to sample sections of Big Cottonwood Creek. It was necessary to backpack the unit into the section not paralleled by the road. Total lengths were taken on all trout obtained.

FINDINGS

Sturgeon Study

Five white sturgeon were caught, tagged and released by Bill Jackson, Jr.

in the Snake River between 1 April and 6 June 1978 in the section between Bliss Dam and Bancroft Springs which is approximately 8 km (5 mi) upstream from King Hill.

Sturgeon caught in 1978 ranged in total length from 66.0 to 213.4 cm (26 to 84 in). Age analysis could be obtained from only two of the fish. One fish 71.1 cm (28 in) in length was found to be about 6-years old or slightly older. The other sturgeon aged was 165.1 cm (65 in) in length and its age was estimated at about 25 years. Table 1 summarizes information on white sturgeon caught and tagged in this portion of the Snake River since May of 1976. Growth comparisons of sturgeon caught as compared with Middle Snake River sturgeon is compared in Table 2 & Figure 1.

Present indications are Wiley Dam, which would be located on the Snake River approximately 3.2 km (2 mi) southwest of Bliss or about 10.5 river km (6.5 river mi) downstream from Lower Salmon Falls Dam, will very probably be built. However, prospects do not appear to be too imminent for construction of Dike Dam which would be located about 11.3 km (7 mi) upstream from King Hill or about 12.9 river km (8 river mi) downstream from Bliss Dam. They are apparently having difficulty in locating a suitable foundation site for Dike Dam. Both these river sections involved contain very good to excellent sturgeon habitat.

Brown Trout Studies -- Little Wood River

Time conflicts prevented any electrofishing from being performed on the Little Wood River in 1978. However, due to declining catch rates of brown trout in the portion of the Little Wood River involved, we decided to again plant brown fingerlings. Brown trout fry and fingerlings were first planted in the stream in 1970 and were planted annually through 1974. They were not planted in 1975, 1976 or 1977.

Approximately 27,000 brown trout fingerlings were stocked in the Little Wood River on 20 April. The fish were raised at the Hagerman Hatchery and averaged about 76.2 mm (3 in) in total length. We spread the fish out from the upper end of the Bear Track Williams property downstream for about 6.4 km (4 mi). The fish were planted at about 10 different locations within the 6.4 km (4-mi) stretch of stream. These fish began to show up in substantial numbers in the creel in late summer and early fall.

Minidoka Dam Studies

On 23 March 1978, two other Department fisheries employees and myself attempted to set up flow transects below Minidoka Dam. However, we found too much water was passing through the dam (350 cfs) to set up suitable transects and much of the area was too deep to wade. On 28 March 1978, the Bureau of Reclamation ran spill tests at the dam. Observations were made at three different flow stages. At 0800 hr there was a total of 330 cfs going through the spillway portion of the dam with the total river flow at the gauge downstream from the dam at 2,932 cfs. The flow was increased to 500 cfs and later to 1,000 cfs. Not much difference was discernible in wetted areas between 300 and 500 cfs but there was a graphic difference between 500 and 1,000 cfs. Numerous aerial photos of all three flow stages were taken by a Bureau of Reclamation photographer from a helicopter.

Table 1. Data pertaining to 23 white sturgeon caught, tagged and released by Bill Jackson, Jr. in the Snake River between Bliss Dam and King Hill from 2 May to 6 July, 1976, 3 April to 14 May, 1977 and 1 April to 6 June, 1978.

Date caught	Location				Total length		Tag no.	Approx. age	Remarks
					cm	(in)			
<u>1976</u>									
5/2	Just	above	Bancroft	Spr.	116.8	(46.0)	B-1410	Unk.	Caught again 5/30/ 76 in same hole.
5/2	"	"	"	"	143.5	(56.5)	B-1405	"	
5/8	"	"	"	"	106.7	(42.0)	B-1401	"	
5/8	"	"	"	"	185.4	(73.0)	B-1402	"	
5/9	"	"	"	"	71.1	(28.0)	B-1403	"	
5/9	"	"	"	"	198.1	(78.0)	B-1404	"	
5/15	"	"	"	"	171.5	(67.5)	B-1406	20	
6/27	"	"	"	"	68.6	(27.0)	B-1409	9	
7/6	Just	below	Bliss	Dam	63.5	(25.0)	B-1407	6	
7/6	"	"	"	"	76.2	(30.0)	B-1408	6	
<u>1977</u>									
4/3	Above		Bancroft	Springs	83.8	(33)	B-1420	9	
4/16	"		"	"	78.7	(31)	B-1411	9	
4/16	"		"	"	73.7	(29)	B-1419	10	Caught again 4/30/ 77 in hole 1/2 mi. up stream.
4/23					139.7	(55)	Z-523	Unk.	
4/23	"		"	"	177.8	(70)	Z-524	Unk.	
4/24	"		"	"	73.7	(29)	B-1418	6	Caught again same hole 5/1/77
4/30	"		"	"	118.1	(46.5)	Z-517	11	Caught again 4/15/ 78 same hole. Had grown 65 mm (2.5 in
5/14	"		"	"	63.5	(25.0)	B-1104	5	
<u>1978</u>									
4/1	"		"	"	66	(26)	B-1105	Unk.	
4/1	"		"	"	213.4	(84)	Unk.	Unk	
4/29	"		"	"	165.1	(65)	Z-511	25	
5/30	"		"	"	76.2	(30)	Unk	Unk.	
6/6	"		"	"	71.1	(28)	B-1106	6+	

Table 2. Comparison of age length data of 12 Bliss Dam-Bancroft Springs sturgeon caught between 2 May 1978. 6 June 1978, with 550 Middle Snake River sturgeon between 1973 and 1975.

Number	Estimated age in years	Total length of Bliss-Bancroft sturgeon in cm (in)		Total length of Mid-Snake sturgeon in an (in)	
1	5	63.5	(25.0 in)	58.2	(22.9 in)
4	6	71.1	(28.0 in)	60.6	(23.9 in)
3	9	77.0	(30.3 in)	66.3	(26.1 in)
1	10	73.7	(29.0 in)	67.7	(26.6 in)
1	11	118.1	(46.5 in)	69.0	(27.2 in)
1	20	171.5	(67.5 in)	145.0	(57.1 in)
1	25	165.1	(65.0 in)	169.2	(66.6 in)

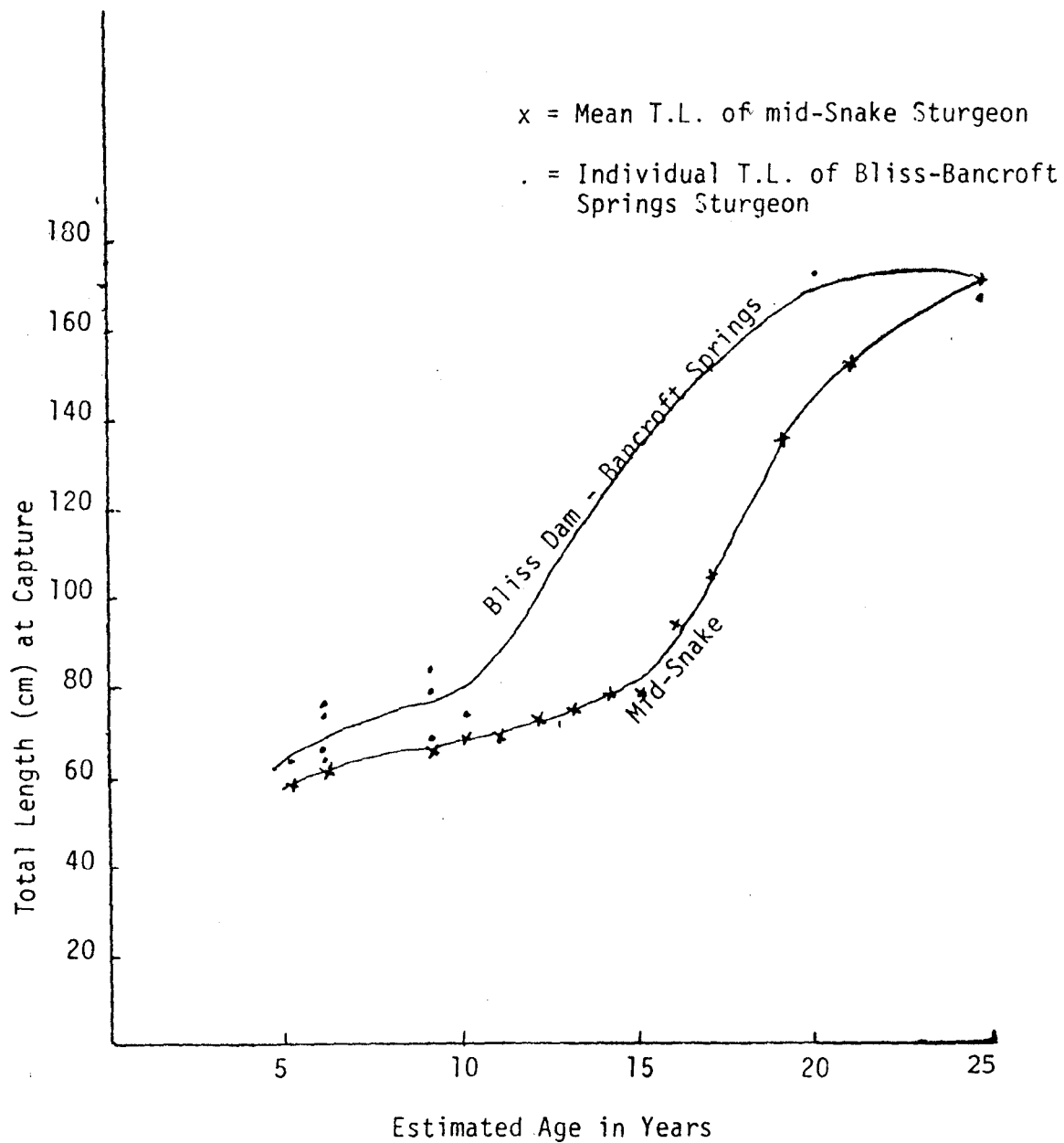


Figure 1. Comparison of age length data of 12 Bliss Dam - Bancroft Springs sturgeon caught between 2 May 1976 and 6 June 1978 with 550 middle-Snake River sturgeon caught between 1973 and 1975.

The Cooperative Fisheries unit continued the flow study below Minidoka Dam in early October.

In estimating the discharges at the dam necessary to maintain good game fish populations, they have been evaluating the flows required to keep water temperatures within tolerable limits and the quality and quantity of habitat available at those flows.

Water passing over the spillway at Minidoka Dam from late June to early November is relatively warm 20.6-23.9 C (69-75 F) since it is being drawn from the surface of the reservoir. At the flow of 4,000 to 5,000 cfs present over the spillway at the time (4 October 1978) it was found the water temperature did not increase appreciably as it passed down the spillway channels -- which are up to 1,402-m (4,600-ft) long. If discharges down the spillway are reduced too drastically, their studies indicate water temperatures could increase enough to be unsuitable for trout.

On 4-5 October, the spillway below the dam was divided into four separate flow areas: 1) north channel; 2) north main channel; 3) main channel and 4) south channel. It was determined water released from the four portions of the spillway flows down these respective channels with only small amounts of lateral mixing between channels.

Flows of 673 cfs, 1,300 cfs and 1,900 cfs were observed. It was determined whatever discharge would prevent a temperature rise of more than 1.12 C (2 F) would provide adequate habitat to maintain the trout populations. It appeared a discharge of 1,300 cfs would provide adequate amounts of trout habitat and good access to fishing areas during cooler parts of the year. They estimated during the hottest part of the summer a flow of 1,900 cfs would be needed to keep water temperatures from increasing more than .56 C (1 F).

Tag returns coming in from the 9,900 catchable rainbow trout planted in the reservoir and below the dam are being sent directly to the Cooperative Fishery Research Unit.

Big Cottonwood Creek -- Emergency Cutthroat Trout Survey

On 23 June 1978, we electrofished portions of Big Cottonwood Creek to get an indication of fish populations in the stream. We were assisted in the operation by YACC personnel.

The first sections of the stream that we shocked were in the lower portion of the creek having good road access. A road parallels the stream in this section which is easily traversed by two-wheel drive vehicles. We drove to the end of the road at Pickett Hollow and shocked areas of the creek on downstream for about 5.2 km (2 mi). A total of approximately 220 m (720 ft) of the stream was shocked in this section. We found fair populations of high quality cutthroat trout in all sections sampled. A total of 33 cutthroat was obtained and the trout varied in length from 102 mm (4 in) to 318 mm (12.5 in) with an average length of 194 mm (7.6 in). Another 18 cutthroat were turned over with the shocker but could not be netted, bringing the estimated total of cutthroat to 51. Body condition of the cutthroat was excellent with a 305 mm (12 in) fish weighing nearly 0.5 kg (1 lb). Six hatchery catchables ranging in total length from 235 mm (9.25 in) to 381 mm

(15 in) were also obtained. These trout were also in fine body condition and the 381 mm (15 in) fish appeared to be a carryover catchable weighing approximately 0.8 kg (1.75 lb). One wild rainbow 172 mm (6.75 in) was captured. Approximately 106 sculpins were obtained in sections sampled in this part of the stream and were the only species of fish observed other than trout. The sculpins ranged in length from about 25 mm (1 in) to about 114 mm (4.5 in).

After completing the electrofishing along the roaded section at the lower end of the stream, we went upstream to the area just downstream from Poison Gulch and part of the crew remained to do some further shocking in the relatively inaccessible portions of the stream. They electrofished a total of approximately 311 m (1,020 ft) of stream between 23-25 June and found excellent populations of cutthroat trout -- much greater than in the roaded section downstream. They obtained a total of 169 cutthroat ranging in length from 57 mm (2.25 in) to 305 mm (12 in) with an average length of 181 mm (7.1 in). An additional estimated 251 cutthroat were turned over but escaped bringing the estimated total to 420 cutthroat. One of these cutthroat was estimated to be about 356 mm (14 in) in length. As the cutthroat obtained in the lower sections of the stream, these fish were also in fine body condition. Only one rainbow, a 248 mm (9.75 in) catchable was shocked and it was apparently a trout which had drifted down from one of the accessible tributaries upstream which are stocked. No sculpins or species of fish other than trout were obtained in this portion of the stream.

The survey crew did some hook and line angling in the roadless section of the stream with excellent results. They caught 70 cutthroat in 7 hours of fishing for a catch rate of 10 trout per hour. The cutthroat ranged from 152 to 330 mm (6 to 13 in) and one trout of about 1.1 to 1.4 kg (2.5 to 3 lb) and approximately 432 to 557 mm (17 to 18 in) in length was observed. The trout were all caught on flies and lures and all but a few were returned to the stream.

The stream habitat in general is in excellent condition with very good cover and shade. Good spawning areas were prevalent throughout most of the areas surveyed. Water temperatures of the stream were fairly constant and fluctuated between 11.1 and 12.2 C (52-54 F).

Six trail cycles were observed in the upper area surveyed. Two of these had come in from Pickett Hollow and four had come in from Sawmill Creek. There is apparently about 1.6 km (1 mi) of the trail which is impassable to trail cycles in its present condition to all but possibly a few expert riders and this prevents nearly all cyclists from going all the way through the area. Some other portions of the trail could also be classed as very marginal or strictly expert rider type.

Based on our survey of the area, we strongly recommended to the Forest Service against any improvements of the existing trail on the stream. Our electrofishing indicated there are approximately 41 cutthroat per 30.5 m (100 ft) of the stream in the unroaded section as compared to about 7 cutthroat per 30.5 m (100 ft) in the section paralleled by the road -- nearly six times greater in the unroaded section. We stressed to the Forest Service a high quality native cutthroat fishery of this nature should definitely be preserved and that we felt an improved trail through the area and the associated heavy increase in angler pressure would soon ruin it.

Information on wildlife populations was also gathered by Wildlife Bureau personnel and they also recommended against improvement of the trail. Apparently the Forest Service has decided not to improve the trail.

Table 3. Comparison of trout populations sampled by electrofishing between roaded and relatively inaccessible portions of Big Cottonwood Creek, Cassia County, 23-25 June 1978.

<u>Stream section no.</u>	<u>Length in feet</u>	<u>Ct obtained</u>	<u>Est. Ct missed</u>	<u>HRB</u>	<u>RB</u>	<u>Est. HRB/Rb missed</u>	<u>Sculpins</u>
*1	220	12	8	-	-	-	26
*2	200	11	4	-	-	-	20
*3	<u>300</u>	<u>10</u>	<u>6</u>	<u>6</u>	<u>1</u>	<u>4</u>	<u>60</u>
	720	33	18	6	1	4	106

* Stream sections paralleled by road.
7 ct/100 ft or 8.6 rb & ct/100 ft. Av. total length ct 194 mm (7.6 in).

**4	90	21	15	-	-	-	-
**5	180	23	41	-	-	-	-
**6	200	16	30	-	-	-	-
**7	180	26	50	-	-	-	-
**8	250	60	80	-	-	-	-
**9	<u>120</u>	<u>23</u>	<u>35</u>	<u>1</u>	<u>-</u>	<u>-</u>	<u>-</u>
	1,020	169	251	1	-	-	-

** Relatively inaccessible stream sections
41 ct/100 ft. Av. total length 181 mm (7.1 in)

JOB PERFORMANCE REPORT

State of Idaho Name: REGIONAL FISHERY MANAGEMENT
INVESTIGATIONS
Project No. F-71-R-3 Title: Region 4 Technical Guidance
Job No. IV-d
Period Covered: 1 January 1978 to 31 December 1978

ABSTRACT

During 1978 a total of 169 requests for comments by other agencies or organizations were processed in Region 4. Comments were provided to the Environmental Protection Agency, Bureau of Land Management, U.S. Army Corps of Engineers, U.S. Forest Service, State Clearinghouse and the State Departments of Water Resources, Transportation, Public Lands and Health and Welfare.

A total of 69 stream channel alteration permits were processed, reviewed or inspected in the region. Approximately 49.3% of these permits (34) were for the Big Wood River and tributaries and 43.5% for the Main Snake River and its tributary streams.

Many miscellaneous activities were commented on or participated in.

Author:

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RECOMMENDATIONS

Technical guidance and assistance pertaining or relating to the fishery resource of Region 4 should be continued on an annual basis.

OBJECTIVES

To furnish technical assistance, advice and comments to other agencies, organizations or individuals regarding any items, projects or activities associated with or which have an impact on the fishery resource or aquatic habitat of the region.

To comment on environmental impact statements, environmental analysis reports, discharge permits or similar items. To participate in the Department of Fish and Game fish and wildlife resource planning.

TECHNIQUES USED

Reviews, field inspections where necessary, comments, expertise, advice and recommendations were furnished upon request to all governmental, private organizations and individuals.

Numerous meetings were attended as necessary.

Information and comments were furnished to the Department of Fish and Game's fish and wildlife resource plan. A 5-year Regional Fisheries Management Plan was written for Region 4.

FINDINGS

A total of 169 requests for comments by other agencies were processed in 1978. These are listed below.

Department of Water Resources	108
Environmental Protection Agency	9
State Clearinghouse	11
Bureau of Land Management	5
Army Corps of Engineers	10
U. S. Forest Service	7
Department of Transportation	4
Department of Public Lands	5
Department of Health & Welfare	1
Miscellaneous	9

Stream Channel Alterations

A total of 67 stream channel alterations were processed in Region 4 during 1978. Following is a summary of channel alterations and channel alteration permits processed, reviewed or inspected in Region 4 during 1978.

Big Wood River Drainage

A total of 34--19 on the mainstem Big Wood River, and 15 on streams tributary to the Big Wood River. Eighteen of these alterations were processed under Department of Water Resource's Minimum Standards.

Main Snake River and Tributaries

A total of 30--4 on the mainstem Snake River and 26 on tributary streams. A total of four of these alterations were performed under the Department of Water Resource's Minimum Standards.

South Fork Boise River Drainage

A total of two applications--both on the main South Fork of the Boise.

Goose Creek Drainage

A total of 2 applications--one for mainstem Goose Creek and one for a tributary stream.

Raft River Drainage

One channel alteration was processed for the Raft River Drainage.

Thirty-nine applications for a Permit to Appropriate Public Waters for the State of Idaho were processed--37 for the Snake River Drainage, one for the Big Wood River Drainage and one for the Goose Creek Drainage.

Miscellaneous Activities

The following lists some of the miscellaneous activities I participated in during 1978.

Finalized the rough draft for the 5-year regional fisheries management plan for Region 4.

Completed a list of reasons for special fisheries regulations and closures within the region.

Summarized all plantings of warm water fish made from ponds on the Hagerman Wildlife Management Area since their construction. An affidavit pertaining to this information was filed with the Department of Water Resources for possible future use in preserving waters on the management area.

Attended a water measuring short course conducted by Department of Water Resources personnel.

A field trip of Box Canyon Creek, Vinyard Creek and Devil's Corral with personnel from the BLM, State Parks Department, Nature Conservancy, U. S. Fish and Wildlife Service and the Water Resource Board.

Reclassified all of the major streams in Region 4 under a revised rating system.

Two tours of the Rock Creek road with personnel from the U.S. Forest Service, Soil Conservation Service, Department of Water Resources, Department of Health and Welfare and local ranchers.

Met with all fish hatchery superintendents stocking fish in Region 4 to finalize changes involved in the planting catalog revision and to finalize pro-posed fish stockings in the region for 1978.

An all-day meeting/field trip with Bureau of Land Management and Department of Fish and Game personnel to discuss present stream survey methods and formulate a satisfactory field form.

Toured Malad River Canyon, Upper Salmon Falls Power Plant and Malad Gorge State Park with Idaho Power Company representatives, U. S. Fish and Wildlife Service personnel and State Parks personnel to discuss problems with the area.

Spent some time on Anderson Ranch Reservoir looking over areas proposed for boat camping by the Bureau of Reclamation and attended various meetings pertaining to the same.

Met and conferred with various individuals and agencies regarding the impact of the proposed Wiley and Dike Dams on the Snake River.

Attended numerous interagency and public meetings regarding fisheries and wildlife and/or projects having a potential effect on these resources.

Reviewed numerous private pond permits and commented on them when necessary.

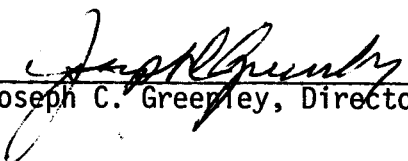
Spent considerable time inspecting numerous commercial fish facilities and discussing problems such as proper fish passage and screening with the owners involved.

Submitted by:

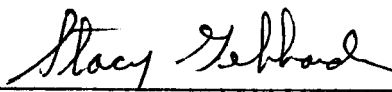
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